



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/562,804	05/19/2008	Thomas Pullen	66969-0004	6079
84362	7590	06/22/2010	EXAMINER	
GKN Driveline/ITG c/o Kristin L. Murphy 39533 Woodward Avenue, suite 140 Bloomfield Hills, MI 48304			SAAD, ERIN BARRY	
			ART UNIT	PAPER NUMBER
			1793	
			MAIL DATE	DELIVERY MODE
			06/22/2010	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/562,804

Applicant(s)

PULLEN ET AL.

Examiner

ERIN B. SAAD

Art Unit

1793

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 June 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 19, 20 and 22-31 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 19, 20 and 22-31 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 December 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Paper No(s)/Mail Date _____
- 6) ☐ Other: _____

DETAILED ACTION

Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn. This Action is **Non-Final** because the Examiner inadvertently did not provide a rejection for claims 25 or 26 in the previous Office Action.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
2. Claim 24 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
3. Claim 24 recites the limitation "a process according to claim 21" in line 1. There is insufficient antecedent basis for this limitation in the claim. Claim 21 was cancelled.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1, 19-28, 30 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lurenbaum (DE725619 from IDS filed on 12/29/2005) in view of Myers (6,811,633) and Holland et al. (5,139,704).

Regarding claim 1, Lurenbaum discloses process for fixing a balancing weight on at least one location on a shaft by soldering (lines 1-35). Lurenbaum does not specifically state that the shaft is hollow. However, Myers discloses joining balancing weights to a hollow driveshaft (abstract). To one skilled in the art at the time of the invention it would have obvious to use the method of soldering balancing weights of Lurenbaum to balance the hollow driveshaft of Myers because Myers discloses that hollow driveshafts have different variations in roundness, straightness and wall thickness that will create imbalances along the driveshaft (column 1 lines 29-44)

Lurenbaum does not specifically disclose that the solder is a flux-less solder foil. However, Holland discloses using flux-less solder foils for soldering metal components (column 1 lines 29-37, column 2 lines 44-46, column 3 lines 44-56). To one skilled in the art at the time of the invention it would have been obvious to use a flux-less solder foil for soldering as this is a well known soldering material and Holland discloses that flux creates a problem of leaving a residue on the surface of the soldered component (column 1 lines 29-37).

The recitation "for torque transmission at rotational speeds in the range of 3000-12000 rpm in a drive system for a vehicle" is intended use. During examination, statements in the preamble reciting the purpose or intended use of the claimed invention must be evaluated to determine whether the recited purpose or intended use

results in a structural difference (or, in the case of process claims, manipulative difference) between the claimed invention and the prior art. If so, the recitation serves to limit the claim. See, e.g., *In re Otto*, 312 F.2d 937, 938, 136 USPQ 458, 459 (CCPA 1963) (MPEP 2111.02).

Regarding claim 19, Lurenbaum discloses that the balancing weight may be attached by soldering (lines 1-35). Since solder is known as "soft solder", it is the Examiner's position that the solder of Lurenbaum is a soft solder.

Regarding claim 20, Lurenbaum discloses that the balancing weight may be attached by soldering (lines 1-35). Since soldering is completed at temperatures below 450 C, it is the Examiner's position that the soldering of the balancing weights of Lurenbaum would be completed at a temperature lower than 450 C.

Regarding claims 22-24, Lurenbaum does not specifically disclose that the soldering step at the at least one location is no longer than 3 seconds. However, taken in its broadest reasonable interpretation, the "soldering step" is taken to be the instantaneous moment when the balancing weight is joined to the shaft. It is the Examiner's position that the soldering step of Lurenbaum is not longer than 3 seconds.

Regarding claims 25-26, Lurenbaum does not specifically disclose a joining force of less than 2000 Newton is exerted on the at least one balancing weight towards the hollow shaft. However, during the soldering of the balancing weight to the hollow shaft, there is going to be at least some force exerted to place the balancing weight into position on the hollow shaft and this force would inherently be less than 2000 Newton because such a force is equivalent to 450 lbf. One of ordinary skill in the art would have

readily appreciated that a soldering process of this nature would never be carried out at a force exceeding 2000 Newton because this would damage the shaft during the soldering process. However, if it is not taken that the reference inherently meets this limitation, then it would have been obvious to carry out the soldering process without exceeding a force of 2000 Newton to prevent damage to the parts.

Regarding claim 27, Lurenbaum does not specifically disclose that the balancing weight is first provided with solder material and, thereafter, fixed to the hollow shaft. However, it would necessarily flow that the solder material would be provided to the balancing weight before being fixed to the hollow shaft, otherwise there would be no soldering occurring between the balancing weight and the shaft.

Regarding claim 28, Lurenbaum does not disclose that a plurality of balancing weights is fixed, and at least in some cases, different quantities of solder material are provided at the balancing weights. Lurenbaum discloses soldering a balancing weight to shaft. Myers discloses that a plurality of balancing weights may be added to the shaft. Myers also discloses that the sizes of balancing weights can be varied (column 5 line 65- column 5 line 4 and column 6 line 27-30). To one skilled in the art at the time of the invention it would have been obvious to use multiple balancing weights because Myers discloses that it provides different amounts of weight for facilitating the balancing process and for stress control (column 5 line 65- column 5 line 4 and column 6 line 27-30). Myers does not disclose using different amount of solder/joining material on the balancing weights. However, to one skilled in the art at the time of the invention it would have been obvious to use different amounts of solder depending on the size of the

balancing weights. The bigger the weight, the more solder would need to be used to ensure a proper bond between the weight and the shaft.

Regarding claim 30, Lurenbaum does not disclose that the balancing of the hollow shaft and the soldering of the at least one balancing weight are carried out on a single machine. However, Myers discloses balancing a hollow shaft and joining of balancing weights using a single machine. Myers discloses that the shaft is placed on a balancing machine. After balancing, the weights are joined to the surface. Myers discloses that the shaft is then re-balanced. After re-balancing the shaft is removed from the machine. Myers does not specifically state that the weights are joined to the shaft while on the balancing machine. However, it is the Examiner's position that the shaft is still on the balancing machine because Myers does not disclose removing the shaft from the machine until after it is re-balanced (after joining of the weights) (column 4 lines 28-48, column 6 lines 11-30). To one skilled in the art at the time of the invention it would have been obvious to use the balancing-joining method of Myers with the soldering method of Lurenbaum to ensure that the balancing weights are placed at the correct locations during soldering.

Regarding claim 31, Lurenbaum discloses a process for fixing a balancing weight on at least one location on a hollow shaft by soldering (lines 1-35). Lurenbaum does not disclose brazing. However, brazing is an obvious variant to soldering. Soldering and brazing of the balancing weight to the shaft would provide similar results. Lurenbaum does not specifically disclose that the solder is a flux-less solder. However, Holland discloses using flux-less solder for soldering metal components (column 1 lines

29-37, column 2 lines 44-46, column 3 lines 44-56). To one skilled in the art at the time of the invention it would have been obvious to use a flux-less solder for soldering as this is a well known soldering material and Holland discloses that flux creates a problem of leaving a residue on the surface of the soldered component (column 1 lines 29-37).

The recitation "for torque transmission at rotational speeds in the range of 3000-12000 rpm in a drive system for a vehicle" is intended use. During examination, statements in the preamble reciting the purpose or intended use of the claimed invention must be evaluated to determine whether the recited purpose or intended use results in a structural difference (or, in the case of process claims, manipulative difference) between the claimed invention and the prior art. If so, the recitation serves to limit the claim. See, e.g., *In re Otto*, 312 F.2d 937, 938, 136 USPQ 458, 459 (CCPA 1963) (MPEP 2111.02).

6. Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lurenbaum (DE725619 from IDS filed on 12/29/2005), Myers (6,811,633) and Holland et al. (5,139,704) as applied to claim 1 above, and further in view of Porter et al. (2,914,642).

Regarding claim 29, Lurenbaum does not specifically disclose that the heat sources used for the soldering step are either inductor or convector heaters. However, Porter discloses using an induction heater for soldering components (column 1 lines 21-45). To one skilled in the art at the time of the invention it would have been obvious to use an induction heater for soldering because Porter discloses that the induction heater

reduces oxides on the faces of the surfaces being joined to promote an effective union (column 1 lines 21-30).

Response to Arguments

Applicant's arguments with respect to claims 1, 19-20, 22-31 have been considered but are moot in view of the new ground(s) of rejection.

7. The Applicant argues that Lurenbaum teaches away from "securing the at least one balancing weight to the at least one location by soldering".

The Examiner disagrees. While Lurenbaum may teach that gluing has higher fatigue strength than soldering, the reference clearly discloses (through translation) that "balancing such parts (shafts) imbalance masses are welded on in the form of sheet metals on the body which can be balanced or soldered. One can obtain *also* a compound of the automatic sheet metals with the body which can be balanced by gluing on...". A reasonable interpretation of this excerpt supports the Examiner's position that Lurenbaum discloses that both soldering and gluing are acceptable forms of attaching the balancing weights to the shaft even if gluing may be the preferred technique.

8. The Applicant argues that Lurenbaum fails to suggest or disclose "wherein the at least one balancing weight is first provided with solder material, and thereafter fixed to the hollow shaft". The Applicant argues that the Examiner's position that "it would necessarily flow that the solder material would be provided to the balancing weight before being fixed to the hollow shaft, otherwise there would be no soldering occurring between the balancing weight and the shaft" is incorrect.

The Examiner disagrees. It is the Examiner's position that the term "fixed" refers to the soldering process being complete and the balancing weight is bonded to the shaft. For the balancing weight to be "fixed" to the shaft, solder must be placed between the balancing weight and shaft; therefore, it is the Examiner's position that it would necessarily flow that the solder material would be provided to the balancing weight before being fixed to the hollow shaft, otherwise there would be no soldering occurring between the balancing weight and the shaft.

9. The Applicant argues that Lurenbaum fails to teach "wherein during soldering, a joining force of less than 2000 Newton is exerted on the at least one balancing weight towards the hollow shaft" as recited in claims 25-26.

The Examiner disagrees. During the soldering of the balancing weight to the hollow shaft, there is going to be at least some force exerted to place the balancing weight into position on the hollow shaft and this force would inherently be less than 2000 Newton because such a force is equivalent to 450 lbf. One of ordinary skill in the art would have readily appreciated that a soldering process of this nature would never be carried out at a force exceeding 2000 Newton because this would damage the shaft during the soldering process. However, if it is not taken that the reference inherently meets this limitation, then it would have been obvious to carry out the soldering process without exceeding a force of 2000 Newton to prevent damage to the parts.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ERIN B. SAAD whose telephone number is (571)270-3634. The examiner can normally be reached on Monday through Thursday from 8am-5pm Eastern time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jessica Ward can be reached on (571) 272-1223. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/E. B. S./
Examiner, Art Unit 1793
6/15/2010

/Jessica L. Ward/
Supervisory Patent Examiner, Art Unit 1793